

US EPA ARCHIVE DOCUMENT

**U.S. ENVIRONMENTAL PROTECTION AGENCY, REGION V  
POLLUTION/SITUATION REPORT #153**



**KALAMAZOO RIVER/ENBRIDGE SPILL – REMOVAL  
SITE # Z5JS  
MARSHALL, MICHIGAN  
LATITUDE: 42.2395273; LONGITUDE: -84.9662018**



**E4.0 Containment System Boom Maintenance**

**To:** Susan Hedman, U.S. EPA Regional Administrator  
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 Scott Corbin, Allegan County Emergency Management  
 Mike McKenzie, City of Battle Creek  
 Cheryl Vosburg, City of Marshall  
 Christine Kosmowski, City of Battle Creek

**From:** Ralph Dollhopf, U.S. EPA, Federal On-Scene Coordinator

**Date:** 7/27/2012

**Reporting/Operational Period:** 0700 hours 7/12/2012 through 0700 hours 7/19/2012

### ***1. Site Data***

<b>Site Number:</b>	Z5JS	<b>Response Type:</b>	Emergency
<b>Response Authority:</b>	OPA	<b>Incident Category:</b>	Removal Action
<b>Response Lead:</b>	PRP	<b>NPL Status:</b>	Non-NPL
<b>Mobilization Date:</b>	7/26/2010	<b>Start Date:</b>	7/26/2010
<b>FPN#:</b>	E10527		

### ***2. Operations Section***

- The organizational response structure consisted of the following Branches: 1) Submerged Oil; 2) Containment; 3) Kalamazoo River System; 4) Air Operations; and 5) Waste Management.

#### **2.1 Submerged Oil Branch**

##### ***2.1.1 OSCAR Group***

- Pursuant to the Emerging Oil Management Program (EOMP), Enbridge, U.S. EPA, and MDEQ continued to track the location, response, and sheen differentiation test results of each identified location of sheen/product (globules). Teams recorded and documented sheen observations in the main channel and overbank areas, and conducted sheen testing as necessary. Sheen observations were reported back to Operations Section Chiefs for monitoring and response. See Table 1 for information regarding the total number of sheen differentiation tests conducted, and the results of those tests.

##### ***2.1.2 Submerged Oil Science Group***

- Enbridge's Kalamazoo River Hydrodynamic Transport Model Report containing baseline model calibration results (e.g. riverine and floodplain grids) and various baseline scenario results, sensitivity analysis results, and the Report addendum are currently under review by U.S. EPA.

- U.S. EPA and Enbridge continued joint development of a coring program to quantify the amount of submerged oil remaining in the system. Enbridge submitted draft delineation polygons from the 2012 Submerged Oil Reassessment for review by U.S. EPA.
- U.S. EPA and Enbridge continued discussions regarding interpretation of oil fingerprinting data for samples collected from Morrow Lake and from below the Morrow Lake Dam.
- Enbridge completed sample collection and re-installation of select Walling Tube samplers.
- Monitoring of submerged oil in Morrow Lake and the Morrow Lake Delta continued in accordance with Enbridge's proposed Morrow Lake Monitoring, Assessment, and Management Plan.
- Enbridge collected velocity profiling data from the Kalamazoo River System. The data will be utilized for the development of containment strategies to prevent the continued migration of oil, oil sheen, submerged oil and oil containing sediments into the Morrow Lake fan, and for refinement of the hydrodynamic model.

### ***2.1.3 Submerged Oil Compliance Group***

- No activities were performed during this operational period.

### ***2.1.4 Submerged Oil Recovery Group***

- Daily sheen management activities continued with sheen sweep boats conducting routine recovery activities at Ceresco Dam, Mill Ponds, MP 21.5 – MP 30.8, and the Morrow Lake Delta, along with other ongoing sheen sweep responses as sheen was identified. See Table 2 for information regarding the total number of sheen responses by date.

### ***2.1.5 Submerged Oil Monitoring Group***

- Enbridge continued to maintain an odor response team; however, no odor complaints were received during the operational period.
- Air monitoring and sampling information is included in Tables 3 and 4.

## **2.2 Containment Branch**

### ***2.2.1 Containment Science Group***

- Preliminary inspection of the enhanced E4 Containment System was performed using an underwater camera.

### ***2.2.2 Containment Compliance Group***

- Enbridge tracked an MDEQ permit application for installation of enhancements (e.g. structures) and cylindrical sampling devices at 14 sediment trap locations. The permit application is currently under review by MDEQ pending the submittal of HEC RAS model results for one of the proposed site locations.

### ***2.2.3 Containment Recovery Group***

- Installation of the enhanced E4 Containment System was completed.

- As of July 18, 2012, a total of 9,200 feet of surface hard boom and 5,350 feet of subsurface half curtain was installed at the Ceresco Control Point and the E4 Containment system boom locations. Teams removed debris accumulated within the boomed areas and recorded observations and estimates of surface area of accumulated oil sheen at the control point.

#### ***2.2.4 Containment Monitoring Group***

- Teams continued implementation of the EOMP process. See Section 2.2.1 for additional details regarding the EOMP.
- Teams performed weekly visual inspections of the 6 currently-permitted sediment trap locations.
- Teams performed monthly visual and poling inspections of the 6 currently-permitted sediment trap locations. Sediment sample retrieval was conducted from selected cylindrical sampling devices. Sample results will be used to evaluate and verify the effectiveness of the sediment traps.
- Water level gauges were monitored at multiple locations along the Kalamazoo River, Morrow Lake Delta, and Morrow Lake. In addition, daily water and sediment temperature readings were collected at 10 locations.
- One team tracked sheen/product (globules) observations in Talmadge Creek, the Kalamazoo River, and Morrow Lake.

### **2.3 Kalamazoo River System Branch**

#### ***2.3.1 Talmadge Creek/Kalamazoo River Remedial Investigation Group***

- Implementation of the Kalamazoo River Remedial Investigation (RI) Work Plan continued. As of July 18, 2012, the RI was in progress for 41.67% of the system.

#### ***2.3.2 Kalamazoo River Compliance Group***

- Restoration and stabilization activities were conducted at various Kalamazoo River Bank Erosion Assessment (KRBEA) sites.
- Restoration planting of the Talmadge Creek corridor was initiated between MP 0.0 and MP 0.50.

#### ***2.3.3 Kalamazoo River Remedial Action Group***

- No activities were conducted during the reporting period.

#### ***2.3.4 Talmadge Creek/Kalamazoo River Monitoring Group***

- Monitoring of erosion control devices continued.
- Monthly surface water sampling was conducted along the Kalamazoo River and Morrow Lake.
- Enbridge conducted weekly monitoring of buoys and signage in the Kalamazoo River.

## 2.4 Air Operations Branch

- One over-flight was conducted for situational awareness during this reporting period. Personnel reported observations of sheen/product (globules) to Operations for follow-up testing and or response consistent with the EOMP. See Section 2.2.1 for additional details regarding the EOMP.
- Photographs were taken during the over-flights for presentation during Operations, Command and General Staff, and Multi-Agency Coordination (MAC) Group meetings.

## 2.5 Waste Management Branch

- Contaminated soil, water, and debris continue to be transported to Frac Tank City. Samples are collected for oil recovery determination prior to off-site disposal. Waste management characterization, manifesting, and coordination of transportation and disposal continued according to approved plans.
- A summary of equipment and boom decontaminated during this reporting period is presented in Table 5.
- Quantities of soil, debris, and liquid shipped off-site during the reporting period are presented in Tables 6 and 7.
- The total amount of recovered oil from the inception of the response has been estimated using actual waste stream volumes, analytical data, and physical parameters of oil-containing media. A summary of the estimated volume of recovered oil is presented in Table 8.

## 3. Planning

### 3.1 Situation Unit

- Situation Unit personnel observed and documented progress in operational areas, and continued to assess areas of interest including locations of oil globules and oil sheen consistent with the EOMP. See Section 2.2.1 for additional details regarding the EOMP.
- Daily situation photo logs were prepared and distributed to project participants.

#### 3.1.1 GIS Specialists

- GIS personnel continued to support operations with the generation of site maps.

### 3.2 Environmental Unit

- U.S. EPA continued coordination with United States Geological Survey (USGS) regarding the Kalamazoo River geomorphology evaluation and the impact on strategy and tactics for future oil recovery efforts.

### 3.3 Documentation Unit

- Documentation Unit personnel continued organizing and archiving electronic and paper files.

### 3.4 Resource Unit

- Personnel continued to produce Incident Action Plans (IAPs), support the planning efforts of operations, and provide information to Logistics personnel in order to properly prepare and procure resources.

## **4. Command**

### **4.1 Safety Officers**

- Safety personnel continued conducting work-site safety inspections and implementing the plan for integration of public safety and worker safety on the Kalamazoo River.

### **4.2 Public Information**

- The number of public inquiries reported by Enbridge for this period is presented in Table 9.

## **5. Landowner Environmental Issues**

- Landowner environmental issues, as reported by Enbridge, are presented in Table 10.

## **6. Finance**

- The current National Pollution Funds Center (NPFC) ceiling is \$52.7 Million. Approximately 85.5% of the ceiling has been spent through July 15, 2012. The latest average 7-day burn rate was \$30,517. These cost summaries reflect only U.S. EPA-funded expenditures for the incident. A summary of these expenses is presented in Table 11.

## **7. Scientific Support Coordination Group (SSCG)**

- The SSCG met in Marshall for an all-hands meeting to review the status of on-going studies, and identify approaches to assist in the determination of residual Line 6B submerged oil, and assessment of the potential impacts of agitation on submerged oil.
- Individuals in the Eco-Toxicity Subgroup continue to use the interim version of a Net Environmental Benefits Analysis (NEBA) to assess the harm and benefits accompanying oil recovery efforts. The draft recommendation document is near completion and will be submitted to the FOSC for review upon incorporation of Spring 2012 poling results.

## **8. Participating Entities**

- Entities participating in the MAC include:
  - U.S. Environmental Protection Agency
  - Michigan Department of Environmental Quality
  - Michigan Department of Community Health
  - City of Battle Creek
  - City of Marshall
  - Allegan County Emergency Management
  - Calhoun County Public Health Department
  - Calhoun County Emergency Management
  - Kalamazoo County Health and Community Services Department
  - Kalamazoo County Sheriff
  - Enbridge (Responsible Party)
- For a list of cooperating and assisting agencies, see SITREP #51 (Sections 3.2 and 3.3).



## 9. Personnel On-Site

- Staffing numbers for the entities and agencies active in the response are presented in Table 12.

## 10. Source of Additional Information

- For additional information, refer to <http://www.epa.gov/enbridgespill>. For sampling analysis data, see <http://response.enbridge.com/response/>.

## 11. Clean-up Progress Metrics

**Table 1 – Sheen Differentiation Test Results**

	July 2012							
	Total	18	17	16	15	14	13	12
Sheen Tests Performed	1	1	0	0	0	0	0	0
Results Indicated Petroleum Source	0	0	0	0	0	0	0	0
Results Indicated Biogenic Source	1	1	0	0	0	0	0	0
Inconclusive Test Results	0	0	0	0	0	0	0	0

**Table 2 – Sheen Responses**

Total	July 2012						
	18	17	16	15	14	13	12
61	9	11	12	0	10	12	7

**Table 3 – Real Time Air Monitoring Counts Performed by Enbridge**

Monitoring Location	Total	July 2012						
		18	17	16	15	14	13	12
Odor Response	0	0	0	0	0	0	0	0
Work Area	30	9	0	10	0	0	10	1

**Table 4 – Samples Collected By Enbridge**

Sample Type	Total	July 2012						
		18	17	16	15	14	13	12
Surface Water	0	0	0	0	0	0	0	0
Private Well	1	0	0	0	0	0	0	1
Groundwater	3	0	3	0	0	0	0	0
Sediment	43	0	0	9	0	0	15	19
Soil	40	13	10	3	0	0	8	6
Dewatering	0	0	0	0	0	0	0	0
Sheen	0	0	0	0	0	0	0	0



**Table 5 - Equipment Decontamination**

Location/Media	Total	July 2012						
		18	17	16	15	14	13	12
Frac Tanks	0	0	0	0	0	0	0	0
Vac Trucks-Tankers	0	0	0	0	0	0	0	0
Roll-Off Boxes	0	0	0	0	0	0	0	0
Yellow Iron (light)	0	0	0	0	0	0	0	0
Yellow Iron (heavy)	0	0	0	0	0	0	0	0
Jon Boats	3	0	0	0	0	0	3	0
Air Boats	0	0	0	0	0	0	0	0
Vehicles	0	0	0	0	0	0	0	0
Boom (linear ft)	925	225	200	200	0	0	100	200
Miscellaneous Items	0	0	0	0	0	0	0	0

**Table 6 - Soil and Debris Shipped Off Site (as of 7/18/2012)**

Waste Stream	Cumulative	Disposal Facility
Haz Soil (yd <sup>3</sup> )	19,644	Envirosafe (Oregon, OH)
Non-Haz Soil & Debris (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	76,443	SET/C&C
Non-Haz Soil & Debris (yd <sup>3</sup> ) (Excluding Ceresco Dredge)	64,815	Westside Recycling (Three Rivers, MI)
Non-Haz Soil (yd <sup>3</sup> ) (Ceresco Dredge Only)	5,562	EQ/Republic (Marshall, MI)
Haz Debris (yd <sup>3</sup> )	12,075	EQ/Michigan Disposal (Wayne, MI) and Republic (Marshall, MI)
Non-Haz Household Debris (ton)	1,715	SET/C&C
Non-Haz Impacted Debris (ton)	7,034	

Shaded items are discontinued waste streams.

**Table 7 - Liquid Shipped Off-Site (as of 7/18/2012)**

Stream	Destination Company	Destination Location	Cumulative Volume (gallons) †
Non-Haz Water	Battle Creek POTW	Battle Creek, MI	1,143,280
Non-Haz Water	Dynecol	Detroit, MI	981,792
Non-Haz Water	Liquid Industrial Waste	Holland, MI	1,364,757
Non-Haz Water	Plummer	Kentwood, MI	392,526
<i>Hazardous Water</i>	<i>Dynecol</i>	<i>Detroit, MI</i>	<i>3,594,579</i>
<i>Oil</i>	<i>Enbridge Facility</i>	<i>Griffith, IN</i>	<i>766,288</i>
<i>Other Material</i>			<i>1,405,525</i>
<i>Treated Non-Haz Water</i>	<i>Liquid Industrial Waste</i>	<i>Holland, MI</i>	<i>370,200</i>
<i>Treated Non-Haz Water</i>	<i>Plummer</i>	<i>Kentwood, MI</i>	<i>4,976,140</i>
<i>Hazardous Water</i>	<i>Safety Kleen <sup>a</sup></i>		<i>825</i>
<i>Treated Non-Haz Water*</i>	<i>Dynecol</i>	<i>Detroit, MI</i>	<i>150,700</i>
<i>Treated Non-Haz Water*</i>	<i>Battle Creek POTW</i>	<i>Battle Creek, MI</i>	<i>1,968,700</i>
<b>Total</b>			<b>17,115,312</b>

Shaded and italicized items are discontinued waste streams.

† Cumulative quantities may not reconcile with previous reports (due to auditing).

a New Age lab water and methanol mix generated by mobile laboratory.

\* Treated Non-Haz Water no longer sent to this location.

**Table 8 – Estimated Recovered Oil (as of 7/16/2012)**

<b>Waste Stream Containing Recovered Oil</b>	<b>Destination Company</b>	<b>Destination Location</b>	<b>Estimated Oil Volume in Waste Stream (gallons)</b>
<b>Soil - (Impacted Soil &amp; Debris)</b>	C&C Landfill	Marshall, MI	13,814*
<b>Soil - (Impacted Soil &amp; Debris)</b>	Envirosafe/ Westside RDF	Oregon, OH	278,665
<b>Geotube Sediment - (Impacted Sediment)</b>	Envirosafe/ Westside RDF	Oregon, OH	1,298
<b>Debris - (Roll Off Boxes with Impacted Sorbents, boom, pads, plastic, PPE, vegetation, and biomass)</b>	EQ Michigan	Belleville, MI	33,964
<b>Frac Tank City - Influent to Carbon Filtration System</b>	C&C Landfill	Marshall, MI	8,109
<b>Frac Tank City - Water</b>	Dynecol	Detroit, MI	46,176
	Liquid Industrial Waste Services, Inc.	Kentwood, MI	
	Plummers Env Inc.	Holland, MI	
	BC POTW	Battle Creek, MI	
<b>Ceresco Pretreatment System</b>	C&C Landfill	Marshall, MI	90
<b>A-1 Pretreatment System</b>	C&C Landfill	Marshall, MI	9
<b>Oily Water - RPP</b>	Enbridge Facility	Griffith, IN	766,288
<b>Total</b>	-	-	<b>1,148,413</b>

\* Total updated for analytical received after report generation.  
Shaded items represent discontinued waste streams

**Table 9 – Public Inquiries Received by U.S. EPA and Enbridge**

<b>Location/Media</b>	<b>Total</b>	<b>July 2012</b>						
		<b>18</b>	<b>17</b>	<b>16</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>12</b>
Marshall Community Center	<b>14</b>	1	3	2	0	0	3	5
Oil Spill Public Information Hotline	<b>3</b>	1	0	1	0	0	0	1
Website	<b>0</b>	0	0	0	0	0	0	0
<b>Total Public Inquiries</b>	<b>17</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>6</b>

**Table 10 – Landowner Environmental Issues (as of 7/19/2012)**

<b>Issues this Period</b>	<b>Issues Undergoing Evaluation</b>	<b>Issues Considered Addressed</b>
0	4	1

**Table 11 - Financial Summary**

Item		Expended (Cumulative) (as of 7/15/2012)	
<b>ERRS Contractors</b>			
EQM (EPS50802)	T057	\$	1,199,522
	T060	\$	213,636
LATA (EPS50804)	T019	\$	1,161,082
ER LLC (EPS50905)	T040	\$	683,330
<b>Total ERRS Contractors</b>		<b>\$</b>	<b>3,257,571</b>
<b>Other Contractors</b>			
Lockheed Martin (EPW09031) – TAGA Support		\$	198,379
Lockheed Martin (EPW09031) -Biodegradability Study			25,694
T&T Bisso (EPA:HS800008)		\$	882,087
<b>Total Other Contractors</b>		<b>\$</b>	<b>1,106,160</b>
<b>START Contractor – WESTON (EPS50604)</b>	T030-Response	\$	26,143,982
	T032-Sampling	\$	183,567
	T037-Doc Support	\$	1,646,638
<b>Total START Contractor</b>		<b>\$</b>	<b>27,974,187</b>
<b>Response Contractor Sub-Totals</b>		<b>\$</b>	<b>32,312,224</b>
<b>U.S. EPA Funded Costs: Total U.S. EPA Costs</b>		<b>\$</b>	<b>6,011,977</b>
<b>Pollution Removal Funding Agreements – Total Other Agencies</b>		<b>\$</b>	<b>1,790,754</b>
Indirect Cost (16.00%)		\$	3,598,252
Indirect Cost (8.36%)		\$	1,329,549
<b>Total Est. Oil Spill Cost</b>		<b>\$</b>	<b>43,252,003</b>
<b>Oil Spill Ceiling Authorized by USCG</b>		<b>\$</b>	<b>52,700,000</b>
<b>Oil Spill Ceiling Available Balance</b>		<b>\$</b>	<b>7,657,243</b>

Shaded items are discontinued

**Table 12 - Personnel On-Site**

Agency/Entity	July 2012						
	18	17	16	15	14	13	12
U.S. EPA	1	1	1	0	1	2	2
START	21	21	22	0	9	20	22
MDEQ	6	6	5	0	0	6	6
MDEQ Contractors	5	5	5	0	0	6	6
USGS	0	0	0	0	0	0	2
Calhoun County Public Health	0	0	0	0	0	1	0
Calhoun County (CC) EM	0	0	0	0	0	1	0
City of Battle Creek	0	0	0	0	0	1	0
City of Marshall	0	0	0	0	0	0	0
Kalamazoo County Public Health	0	0	0	0	0	1	0
Kalamazoo Sheriff	0	0	0	0	0	1	0
MDCH	0	0	0	0	0	1	0
Michigan State Police EMD	0	0	0	0	0	0	0
Allegan County Emergency Management	0	0	0	0	0	0	0
MDNR	0	0	0	0	0	0	0
Enbridge – Operations Center	57	53	46	0	8	48	51
Enbridge – Kalamazoo River	36	36	38	0	11	30	33
Enbridge – Containment	15	20	24	0	10	23	24
Enbridge – Submerged Oil	5	6	5	0	0	8	8
Enbridge – Waste Management	1	1	1	0	0	1	1
Enbridge – Security & Flaggers	4	4	4	4	4	4	4
Enbridge – Communications Center	4	4	3	0	0	4	5
<b>Total</b>	<b>155</b>	<b>157</b>	<b>154</b>	<b>4</b>	<b>43</b>	<b>158</b>	<b>164</b>

\*Enbridge Operations and Field include Enbridge and contractors as reported by Enbridge